CLAIMS

1. An improved surface for the growth an attachment of cells comprising a biopolymer coated with a high quality, hydrogen free diamond-like carbon surface.

2. The improved surface of claim 1 wherein the biopolymer is biodegradable.

3. The improved surface of claim 1 wherein the biopolymer is in sheet form.

4. The improved surface of claim 1 wherein the biopolymer is in micro particle form.

5. A method of growing neurons in culture comprising the seeding and growth of neurons on a biopolymer coated with a high quality, hydrogen free diamond-like carbon surface.

6. The method of claim 5 wherein the biopolymer is biodegradable.

7. The method of claim 5 wherein the biopolymer is in sheet form.

8. The method of claim 5 wherein the biopolymer is in micro particle form.

9. The improved surface of claim 1 wherein the biopolymer has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophil, EGF conjugated with polycarbophil, and heparin sulfate.

10. A method of growing neurons in culture comprising the seeding and growth of neurons on a biopolymer made using the method of claim 9.

11. An apparatus for detection of neural cell signals comprising:

a) a unit of biopolymer having embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophil, EGF conjugated with polycarbophil, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted into said unit at low density to proliferate and send out neural processes;

b) an integrated circuit chip or charge coupled device having a means for said neural processes or dendrites to make an electrical connection;

c) a detector means for measuring the electrical signals from the neurons; and

d) a means for attaching said chip to a detector means.

12. The apparatus of claim 11 wherein the biopolymer unit is self-contained.

13. The apparatus of claim 11 wherein the biopolymer unit is semi-solid.

14. The apparatus of claim 11 wherein the integrated circuit chip or charge coupled device has coated onto it during its synthesis, an attachment reagent comprising one or more of the following: Nerve Growth Factor or Diamond-Like-Carbon, to enhance the electrical contact between the neuronal processes or dendrites and the chip.

15. A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is capable of supporting neuronal growth.

16. The growth medium of claim 15 further comprising "May Polymer".

17. The growth medium of claim 16 wherein said "May Polymer" has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophil, EGF conjugated with polycarbophil, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted into said unit at low density to proliferate and send out neural processes.

18. The growth medium of claim 17 wherein the concentration of bFGF conjugated with polycarbophil or heparin sulfate is about 50 μg/mL, the concentration of NGF conjugated with polycarbophil, or heparin sulfate is about 50 μg/mL, the concentration of laminin is about 500 μg/mL and the concentration of RGDS is about 500 μg/mL.

19. A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-

solid biopolymer which is capable of supporting neuronal growth coated with Diamond-Like Carbon.

20. The growth medium of claim 19 further comprising "May Polymer".

21. The growth medium of claim 20 wherein said "May Polymer" has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophil, EGF conjugated with polycarbophil, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted into said unit at low density to proliferate and send out neural processes.

22. The growth medium of claim 21 wherein said biopolymer is shaped into beads, sheets or micro-particles.

23. A method of transplanting neurons to a recipient host comprising the seeding of the neurons of interest into the growth medium of claim 19, allowing the neurons to grow to sufficient density, and implantation of the neurons within the growth medium into said host.

24. A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is capable of supporting neuronal growth which is coated with BCE-ECM.

25. A method for making the growth medium of claim 24 comprising:

a) seeding onto said three dimensional growth medium at low density, a population of bovine corneal endothelial (BCE) cells in a culture media suitable for their growth;

b) allowing the BCE cells to grow to confluence; and

c) aspirating the media and treating the three dimensional growth medium with ammonium hydroxide for a sufficient period of time to remove the cells.

26. A three dimensional growth medium suitable for supporting the growth and replication of neural cells comprising a semi-solid biopolymer which is capable of supporting neuronal growth which is coated with BCE-ECM and with Diamond-Like Carbon.

27. The growth medium of claim 26 further comprising "May Polymer".

28. The growth medium of claim 27 wherein said "May Polymer" has embedded or incorporated into it during its synthesis, an attachment reagent comprising one or more of the following: laminin, fibronectin, RGDS, bFGF conjugated with polycarbophil, EGF conjugated with polycarbophil, and heparin sulfate or Nerve Growth Factor, sufficient to allow neural or nerve cells transplanted into said unit at low density to proliferate and send out neural processes.

28. The growth medium of claims 26 wherein said biopolymer is shaped into beads, sheets or micro-particles.

29. Laboratory apparatus having a coating suitable for inducing the growth and attachment of cells comprising said apparatus having an inside and an outside surface, wherein the

inside surface is the surface in contact with cells and cellular media and the inside surface of said apparatus is coated with a film of Diamond-Like-Coating.

30. The apparatus of claim 29 selected from the group consisting of cell culture dishes, petri dishes, tissue culture flasks, plates, bottles, slides, filter chambers, slide chambers, roller bottles, harvesters, and tubing.

31. Laboratory apparatus having a coating suitable for inducing the growth and attachment of cells comprising coating said apparatus with a film of Diamond-Like-Coating layered over at least one other coating.

32. The apparatus of claim 31 wherein the coating is an extracellular matrix.

33. The apparatus of claim 32 wherein the coating is BCE-ECM.

34. A method of coating laboratory apparatus suitable for inducing the growth and attachment of cells comprising applying to an inside surface a film of Diamond-Like-Coating.

35. The method of claim 34 further comprising coating the inside surface of said apparatus first with at least one other coating, such as BCE-ECM and then coating with Diamond-Like-Coating.

36. The apparatus made according to the method of claim 34.

37. The apparatus made according to the method of claim 35.

38. An improved surface for the growth an attachment of cells comprising a synthetic biopolymer coated with a high quality, hydrogen free diamond-like carbon surface.

39. The improved surface of claim 38 wherein the synthetic polymer is an acrylic polymer and its derivatives or copolymers such as polymethyl methacrylate, poly-N-isopropylacrylamide or poly-2-hydroxymethacrylate, or a polyvinyl alcohol and its derivatives and copolymers.